elucidated in Washington by Fasoranti (1984, Can. Entomol. 116:1441–1448). Adults appear at the beginning of May, and there is a short cycle of development during the warm weather between May and August. The next generation takes longer, from August through May of the following year. Mating and egg laying starts immediately after emergence.

Emergence takes place mostly in the evening (1750–2400 h). Time of emergence provides some protection against the insect's principal predator, the dark eyed junco, *Junco hyemalis* L. Emergence also is temperature dependent. In field and laboratory, emergence occurred only at temperatures between 20–22°C. Insects rarely emerged below or above these temperature limits. A typical exit hole is crescentic, about 0.15–0.20 mm long (N = 350), with the convex side toward the end of the mine. The center of the crescent is about 0.20 mm from the end of the mine.

Under controlled conditions (21°C and 70% RH), emergence of 75 adults was timed and photographically documented with a 35 mm camera attached to a microscope using Panatomic X film. The subjects were illuminated with light from two opposing sources. A typical sequence of emergence is shown in Figs. 1 to 6. The whole process takes between 6–7 minutes.

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UNUSUAL PREDATOR DAMAGE TO *CARTEROCEPHALUS SILVICOLUS* (MEIGEN) (HESPERIIDAE)

Bird-inflicted wing damage in Lepidoptera that fold their wings above their bodies at rest was classified into two categories by Beck and Garnett (1983, J. Lepid. Soc. 37:289–300). To continue the earlier classification proposed by Sargent (1976, Legion of night, Univ. Mass. Press, Amherst, Massachusetts, 222 pp.), who worked with noctuid species, the new categories were called Type IV (for bilaterally symmetrical tears roughly parallel to the main wing veins) and Type V (for beak imprints which cross the main wing veins

FIG. 1. *Carterocephalus silvicolus* (Meigen) ♂ (dorsal), showing Type Vb wing damage.

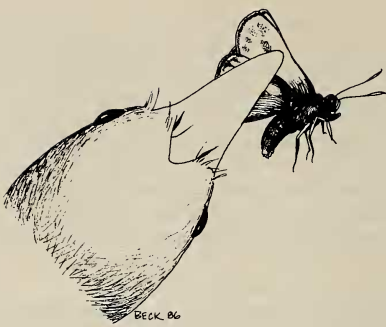

FIG. 2. Position of specimen when held by bird, reconstructed from cut-out tracings of the four wings.

at roughly right angles). A subcategory of Type V (Type Vb) was proposed to accommodate beak imprints across all four wings. We assumed this situation would always result in a successful capture, and Type Vb was included only for completeness.

Since then, a specimen showing "hypothetical" Type Vb damage came to our attention (Fig. 1). Unfortunately, nothing is known about the circumstances surrounding its capture other than the data on the specimen label: Akademici Raros, Novaibirsok, USSR; 20-vi-1978; coll; V. Dubatolov. Despite this, two facts are clear. First, the insect was grasped by a bird's beak firmly enough to leave distinct areas devoid of scales on all four wings. Second, the insect was subsequently released. We believe release was not caused by the insect's efforts to escape, since no significant tears or other signs of pulling free are discernible. It is also unlikely that the insect startled the bird since all wings were immobilized and, from the position of the beak imprints, the legs and antennae were directed away from the bird's face (Fig. 2 or its mirror image).

Hypotheses explaining the skipper's release include 1) an error in prey manipulation by the bird, 2) the possibility of some allomonal product of the skipper, and 3) an extrinsic startle from outside the predator-prey system. The first is possible and the second unlikely, since we know of no references to vertebrate-effective allomonal products produced by members of this genus. We prefer the third possibility. If the bird was not processing prey at the site of capture but bringing it instead to nestlings, there would be time during which the bird could have been startled into releasing its prey by some extrinsic factor.

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